

	STE(A)M activity
Title	An interesting experiment that we can do the laboratory without material
Content knowledge	Measuring object weight
Methodology	Experimenting with objects: pencil case, scale using and dynamometer weighting.
Technology	Video production, Kahoot, PPT, Word
Duration	45 minutes
SAMR model (level of transformation technology produce)	Use the camera to take photos and edit it and prepare a quiz using the Kahoot application.
Target group (age, course)	11 years old, physics
Resources	pencil case, camera, computer, smartphone
Learning Objectives, Skills and competencies or. (Aims to be accomplished)	Preparation of an independent experiment from natural substances Use of IKT (video, PPT, internet, Kahoot, Word) Development of digital competences
Didactic sequence -Description of every lesson with added attention to the diversity of students	They prepared the experiment at home in accordance with the instructions and presented at class in groups of 3 or 4 persons. 1. Experiment Title – Does gravity changes on planet Earth? How much is your value? 2. Theoretical basis of the experiment: Present the theoretical background. At least 15 lines. 3. The task You say what you will present in the experiment. 4. Pencil case, scale and dynamometer. 5. Perform the experiment (describe the work): 6. Results (also draw the apparatus or sketch of the experiment)



	7. Questions (asks 11 questions about the experiment (optional or open type) and answers to them (write the answers in brackets). In Kahoot, prepare a quiz of 5 questions about the experiment (you can use the top or new assemblies - you only use questions from the optional type). 8. What did you found when trying? 9. Literature used Sequence 1. Students use PPT in group to tell us what they have prepared. Teacher makes comments. 3. The students solve the quiz at Kahoot. https://create.kahoot.it/details/duplicate-of-peso-e-massa/7bcbb8e8-bca0-4f79-b973-4cb80a7773b0 Teacher makes comments. 1. Peso a) Quantidade de matéria que existe num corpo b) Força gravítica que um planeta exerce sobre um corpo V 2. O peso de um corpo... a) mede-se com um dinamómetro e a unidade de medida é o newton. V b) representa-se por um vetor. V c) mede-se com uma balança e a unidade de medida é o kg. 3. Massa... a) Quantidade de matéria que existe num corpo b) Força gravítica que um planeta exerce sobre um corpo 4. A massa de um corpo... a) mede-se com um dinamómetro e a unidade de medida é o newton. b) representa-se por um vetor. c) mede-se com uma balança e a unidade de medida é o kg. V 5. Quando um corpo muda de local, a sua massa... a) varia b) não varia V 6. As afirmações “vou pesar-me” ou “o meu peso é 50 kg” a) Não estão corretas V b) Estão corretas 7. Fórmula para calcular o peso a) $P=m/g$ b) $P= g/m$ c) $P= m.c$ 8. Os valores de g e do peso... a) variam de planeta para planeta, sendo menores em Júpiter.
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	b) não variam de planeta para planeta. c) variam de planeta para planeta, sendo maiores em Saturno. d) variam de planeta para planeta, sendo maiores em Júpiter. 9. O peso e a massa são diretamente proporcionais: a) quando a massa aumenta o peso também aumenta. b) quando a massa aumenta o peso diminui. 10. Constante de proporcionalidade entre peso e massa. a) P b) m c) g V 11. A proporcionalidade entre peso e massa verifica-se num gráfico com a forma de ... a) uma linha reta. V b) uma linha curva.
Evaluation (what are we going to evaluate, how, whom...)	CRITERIA FOR ASSESSING SELECTED TRIAL What is being evaluated 1. content - instructions for the preparation of the experiment - (scientifically correct language, originality and selected materials) (25 points) 2. used writing literature (5 points) 3. Relevant criteria (10 points) 4. Questions answered in Kahoot (10 points) 5. Poster (20 points) 6. Appearance and presentation (without the use of gestures, freedom of expression, high, distinct, stimulates the interest of the listeners, eye contact, linguistic correction) (knowledge of theoretical starting points and practical implementation of the experiment) (20 points) 7. Presentation (10 points) Total 100 points 0-20 (1) 21-49 (2); 50-65 (3); 66-89 (4); 90-99 (5)
Conclusions	Physics explains all the phenomena around us and we are only attentive.
Improvements	They have improved the experimentation skills, while using the scientific method. When preparing the presentations they developed their digital competences.

